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VOLUME XXXIX SEPTEMBER, 1940 NUMBER 6

WILDLIFE CONSERVATION AND GEOGRAPHY*

RUDOLPH BENNITT
University of Missouri

Everyone interested in geography has remarked the steady enlargement of its scope and the transfer of its objective from a more or less uncritical description of the landscape to an increasingly critical analysis of interrelationships, causes, effects, and trends. This is quite clear to any reader of the recent geography texts, which indicate that geographers are now concerned both with the environmental factors determining the nature of human activity and with the effects of human activity upon the landscape. In other words, they are preparing a position from which they can appraise all of the interacting forces in human ecology.

This is a praiseworthy objective, and it is probably destined to play an important rôle in the greatest task confronting man: management of his own society. Nevertheless it must not be forgotten that breadth of interest implies breadth of responsibility. While the investigator in a more limited field may at times safely overlook the relations of his problem to others, it seems to me that the geographer can never afford to do so. He is confronted by an unusually difficult task: to know *what* factors are at work, *how* they exert their influence, and *how much* each is worth. He is obligated to bring into his common plan all of the major components of man's economy, and he is guilty of professional oversight if he fails to consider any significant one of them.

WILDLIFE VALUES

As a biologist interested in the biological components of man's environment, I have been interested to find out how some of the geography books are treating biological resources, and from a superficial examination I am forced to conclude that the treatment

* Condensed from an address by Rudolf Bennitt, Professor of Zoology, University of Missouri, before the National Council of Geography Teachers, Chicago, December 27, 1939.

is in some degree one-sided. Without going into unnecessary detail, it appears that animal and plant categories are discussed in about the following order of emphasis: most, quite naturally, is said about the few plants used for cultivation and grazing. Next to these rank the still fewer species of domesticated animals. Then come the forests and other commercially-important wild plants. Last and least are considered the wild animals and the non-commercial wild plants.

The emphasis seems to be almost entirely economic. We read about hunting, fishing, and trapping in relation to primitive cultures; but in relation to our own civilization the discussion seems to deal largely with furbearers, commercial fish, wildlife that harasses mankind in various ways, and accounts of the destruction of wildlife since the coming of the white man. Here and there one finds references to recreational needs and restorative measures—principally refuges, laws, restocking, and predator control; but little prominence is given to two basic and incontrovertible ideas: that the instrument of conservation is management—in the wild as well as on the farm; and that killing by man is not necessarily incompatible with conservation.

It is inevitable that man should be concerned with wildlife chiefly because of its commercial, agricultural, predatory, or pathological importance. But it is also true that man has other major concerns with wildlife to which geographers as a whole have paid little attention in the past. A clear understanding of any or all of these relationships depends upon an understanding of certain basic principles, which in turn must lead to the conclusion that, with a few conspicuous exceptions, restoration and continued public use of all animals and plants are possible under scientific management. It is not the purpose of this paper to do more than touch upon a few of these principles and to show why they should be more widely known.

The measures now being advocated by wildlife managers are more than ever within the purview of the geographer. An immense amount of public recreation, not to mention food, is dependent upon the wildlife supply. Wildlife production is a form of land-use, suited well (tho by no means exclusively) to lands inferior in other respects. It now concerns directly somewhere between 10 per cent and 20 per cent of our population who harvest the crop, and indirectly an even larger percentage. It involves the transfer of more than a billion dollars yearly, over $20,000,000 of which is paid for

licenses alone. It is already an important adjunct to both agriculture and forestry. It is part of the larger scheme of land and water utilization, and its promotion involves nearly all of the restorative techniques undertaken for other reasons. In short, it contributes to the health, enjoyment, income, and education of the people and to the health of the land. These are some of the reasons why not only geographers, but all those interested in human ecology, need to interest themselves increasingly in the conservation and management of wildlife.[1]

HISTORICAL CHANGES

During the past three centuries the area now covered by the United States has changed, roughly speaking, from a land half woodland, half prairie and desert, to a land half of which is devoted to the intensive cultivation of a very few animal and plant species, most of them imported from elsewhere. The waters have changed even more in stability, biological features, and content of substances that have no business there. These changes have altered enormously the so-called carrying capacity of lands and waters for wildlife of some sorts, and on the whole this has been responsible for a much more serious decimation than all the guns, lines, and traps of man.

But all wildlife has not been decimated. While some species were losing ground, others were favored exceedingly by the increasing food and protection on the farms. The bob-white, mourning dove, cottontail, opossum, skunk, red fox, fox squirrel, and many others—now generally considered as "farm wildlife"—have come to be more important to the public than either the original forest or prairie wildlife in the more thickly settled parts of the country. With them increased also some others that are less desirable—the crop-destroying rodents, for example. The result of it all is that today we have, not less wildlife, but *a different kind* of wildlife than we had a century ago.

Professor Leopold[2] recently called attention to this point, showing with admirable simplicity the changing rôles in land-use of wildlife on the "lower" and "higher" levels. The former (insects, rodents, small birds, etc.) are favored by modern clean farming, often to the virtual exclusion of the latter, which include the larger

[1] The commonest use of the term "wildlife" is in reference to the wild vertebrates, especially the mammals, birds, and fish. This is the sense in which it is used here.

[2] A. Leopold, "A Biotic View of the Land." *Jour. Forestry,* 37, 1939, 727-730.

and more spectacular species. Only under a system of what he calls "biotic farming" can we consciously carry the "fountain of energy" springing from the soil "to higher levels before returning it to the soil."

In other words, we still have wildlife and there is every reason to suppose that we shall always have it; but, in rough proportion to the disturbance created by man, the complexion of the wildlife has changed. It will continue to change, the lower levels increasing at the expense of the higher, unless general biotic management enters more and more into land management. Since we are bound to have wildlife of a sort always, it is for us to decide whether to favor carp, grasshoppers, English sparrows, and mice, or to manage our land consciously for the preservation of the "higher" wildlife—bass, eagles, prairie chickens, and deer. We must not forget, by the way, that there is a better system of checks and balances in a diverse society containing both levels than in a more nearly homogeneous society.

SOME BASIC IDEAS AND THEIR APPLICATION

With these points in mind, let us take up a few of the other fundamentals that should be understood, not only by teachers, but by everyone concerned with the outdoors.

The starting-point must be that wildlife and other biological resources are renewable. The problem is not to make the supply last as long as possible, trusting then to human ingenuity to devise a substitute. Rather, it is to manage all biological resources as we now manage field crops, timber, and livestock—on a crop-yield basis.

The crop principle depends upon one simple fact: Under ordinary circumstances every species produces periodically an increment large enough (1) to replace the loss due to "environmental resistance" and (2) to provide what the engineers call a factor of safety. An engineer designs a bridge or an elevator in such a way that it can support two or three or several times the heaviest load that it is ever expected to bear. Every living species is capable of doing just this. With a normal breeding reserve there is a surplus, beyond what is needed to replace the year's losses and almost always beyond what the land can accommodate.

It is not always well understood that, except temporarily and locally, there are never more individuals of a species than their surroundings can support; nor are they more densely crowded than the species itself will permit. One bird per acre seems to be the

maximum density of quail, and other maxima are known. The surplus individuals die because they can find no place to live. If they are not killed by their own species, they die from starvation, exposure, disease, predation, or some other "natural" cause. This is an inexorable law of Nature that was operating long before man came upon the scene.

However, regardless of what happens to the *individual,* as long as there is left for the next season a breeding reserve that can fill the area to capacity, the *species* does not suffer—and after all it is the species that counts. A logical corollary of this is that as long as the *combined* kill by man and Nature leaves an adequate breeding reserve, there is no reason why man should not harvest a crop. Put in another way, it means that taking a crop of wildlife is justified to the extent that it *replaces* the removal of surplus individuals by "natural" means; there is no justification for taking a larger crop than this.

There is abundant evidence that failure to harvest a crop of range cattle does not increase the numbers above the carrying capacity of the range, and this is equally true of game or fish or furbearers. We have sometimes received exaggerated ideas of the value of complete "protection" from a spectacular recovery in an area where the kill by man and Nature together formerly *exceeded* the annual increment. That is to say, we have failed to distinguish between excessive hunting and hunting *per se.* Excessive hunting, like an excess of almost anything else, is stupid; but we need to condemn the excess, not the practice.

It should be noted in passing that the "use" of a crop need not, and usually does not, involve killing it. Only about 9 per cent of the 811 species of North American birds, about 20 per cent of the 431 species of mammals, and 22 per cent of the 600 species of fish are of any importance as game, furbearers, or commercial and game fish. In all, the total does not exceed 15 per cent of the species of wildlife (as defined above) on this continent, and there is no state which permits the killing of anywhere near this percentage. These are the few species that combine size, palatability, quality of fur, or other features in such a way as to make them attractive or useful to hunt and possess. They are so nearly the sole concern of many advocates of conservation that we are likely to overlook the rest.

While the other 85 per cent include some species that at times are undeniably harmful to man's interests (most of them on the "lower level"), nearly all of the 85 per cent have a useful place in the wildlife scheme. A great many of them have inherent eco-

nomic value; some are spectacular; and the usual public attitude toward them—reflected in state and federal laws—has been "live and let live." The principle of the safety factor applies to them as well as to the crop-species, but they are of no special value to man in the hunting or when they are dead. Therefore, we have properly chosen to keep as many of them as possible with us as long as we can, for the tangible and intangible good they do.

I hope it will be apparent by this time that I think the predominantly economic emphasis which the geographers have hitherto laid on our biological resources has not been completely considered; neither is it the only major consideration. But whatever the aspects of animals and plants that interest us most, we must agree that to understand them we must understand the fundamentals of husbandry. Many biologists and, I think, most others still believe that the husbandry of wildlife is best founded on restrictive laws, predator control, artificial restocking, and refuges—probably because these have until now been the most conspicuous. Since this view is found also in some of the geography books—tho most of them make no mention of concrete restorative measures—I should like to discuss them briefly. Each of the four devices just mentioned is a complex subject in itself, but some of the basic ideas are simple.

Restrictive laws. These we must have for two reasons—first, because the public in its collective capacity owns the wildlife and must therefore administer wildlife affairs thru its designated agents; second, because free and unlimited killing of wildlife is no longer possible in these days of more sportsmen, better equipment, better roads, and restricted range. Having said this, however, I must point out two dangers: We are as a people inclined to think that a difficulty is remedied when we have passed a law about it; and we are not yet greatly concerned that those who pass our wildlife laws know what they are doing.

Public insistence that we all have a stake in the conservation of a publicly-owned resource will keep the matter before legislative bodies. Insistence that legislators avail themselves of expert counsel in formulating wildlife laws will increase the fitness of these laws. Insistence that their administration be entrusted only to staffs qualified to understand them and to explain them to the public will make them more effective.

Predator control. One of the oldest conflicts between man and wildlife has been his battle against the predators, which he lumps together as "vermin." Originally a fight against destroyers of livestock or even of human life, this has now been carried to the

alleged destroyers of "useful" wildlife everywhere. The reasoning seems plausible: A dead quail lays no eggs; a dead hawk kills no quail; for every predator destroyed, the prey that it would have killed should survive. But it will not bear analysis. Predators have economic value that has been demonstrated by scores of careful studies; they are an important part of the natural system of checks and balances; many are of esthetic and educational value. Admitting that under special conditions local predator control may be needed, there is no doubt whatever that general predator control in the supposed interest of wildlife has been vastly overdone. It would be more sensible to make our objective the elimination of the occasional habitual rascal than to try to exterminate his species. Few would advocate the extermination of dogs because some dogs habitually kill sheep; and there is also a human analogy. Finally, killing predators does not increase the food, cover, or other requirements which really determine the extent of wildlife populations. Before the coming of the white man, predators and prey existed side by side in large numbers; under wise management and good environmental conditions they still do.

I should like to mention at this point a little-known ecological concept that is one of the most important in all wildlife management and that is just as essential to an understanding of man's own relationships: *Liebig's Law of the Minimum.* Roughly speaking, it is that a species cannot increase beyond the limit set by the *least abundant* necessary factor in its environment. Originally framed in 1843 in relation to the production of field crops, it has been extended to include all species and virtually all environmental factors. If quail lack cover, no increase of food or destruction of predators will increase their numbers beyond what the available cover can shelter. If raccoons lack den-sites, the best of food and protection will not increase their numbers beyond those that the available dens will accommodate. Wildlife managers frequently remark that the real secret of increasing a population is to locate the "minimum factor," raise or improve it, locate the next one, and so on. The relation of this to their ideas about the general ineffectiveness of blind predator control, ill-advised restocking, and other practices carried on without regard to what the land can support is obvious. More than anything else, it demonstrates the place of environmental improvement as the first law of restoration.

Artificial restocking. The practice of "replenishing" the outdoors from game farms and hatcheries—too often without regard for the carrying capacity of the land or water—is so widespread

that any criticism of it amounts to criticism of a vested interest. There are undoubtedly local situations that call for such stocking—to hasten recovery or to provide an immediately harvestable crop if nothing more. In general, however, the arguments against its regular use are these: If an area is already filled to capacity, any added stock must die; depleted populations are far more often explained by depleted ranges than by overkilling. If a favorable area is not filled but still contains a small reserve, protection and environmental improvement will permit rapid natural replenishment, biotic potentials being what they are. If a small favorable area is completely depopulated, the surplus from surrounding lands will inevitably come in. Therefore, as a general rule, restocking seems justified only when there are combined a large area, reasonably high carrying capacity, and complete depopulation. This combination is hard to find.

Refuges. Refuges for vanishing remnants, as rest-areas for migratory species, for research and education, as wilderness or recreational areas, and for some other purposes are amply justified. So are many of the refuges whose purpose is to maintain a breeding reserve the surplus from which emigrates to restock the surrounding country. The whole question is so hedged about with conditions, however, that I shall here make only two flat statements: (1) A refuge is not created simply by posting land; if it does not combine the proper size, nature, location and kind and degree of management for its intended purpose, it may do more harm than good. (2) No species is likely to be restored on any large scale merely by setting aside inviolate areas here and there; this is no fit substitute for general environmental improvement.

CONSERVATION IN THE SCHOOLS

My last question is this: What is the best means of presenting conservation to the schoolboys and schoolgirls of this country? There is almost no end to the number of ways in which it can be presented to boys and girls outside of the schools, and this is a subject which I do not propose to discuss here. In the schools, however, there are two alternatives, each with its advocates: separate courses in conservation, and introduction of the conservation idea into all natural-resource studies.

I wish unreservedly to endorse the latter. There is some need for separate courses in conservation at the college level, where the background of the student is more varied and where preprofessional training may be involved; but at the secondary and elemen-

tary levels I can see no justification for them. The question is a live one; individuals and groups are now clamoring for courses in conservation by legislative fiat, presumably on the theory that the only way to teach something is to make it the subject of a course. If successful, they are likely to increase the difficulty of administering an already-overcrowded curriculum; to set conservation apart as a field in itself; and, because of our present inadequate teacher-training facilities, to endanger the sound teaching of conservation itself. *Conservation mistaught is worse than conservation untaught.*

This subject is not a distinct field of learning. It cuts across almost all imaginable lines and is well-nigh universal in the facts, techniques, and ideas that it uses. Rather, conservation is a point of view, a habit of thinking, a philosophy. Its characteristic is simple: to draw conclusions from present and past experience and to extrapolate them into the future. Few teachers would support the belief that this kind of thinking is not essential to every course dealing with natural resources. I should regard it as essential to the teaching of history, civics, sociology, geography, agriculture, and many other subjects. Yet if the "conservation viewpoint" pervades all the courses where it can profitably be used, there is then no need for a course in conservation; students can learn conservation in no better way. If it does not, it is unlikely that a lone course in conservation somewhere in the curriculum will establish in boys and girls the habit of thinking into the future.

One who thinks about the future management of wildlife is not content, as some of our conservationists seem to be, merely to bewail the prodigal misuse of our natural heritage. He sees that some species are gone forever and that many landscapes are ineradicably changed; he knows that neither the wildlife nor the landscape can ever again be just what it once was. But he also knows that we shall always have lands, waters, and wildlife of a sort; that some forms of wildlife (Leopold's "higher levels") yield to mankind the greater values—economic, educational, esthetic, self-regulatory, and the rest; and that we are even now equipped to carry out the kind of management necessary to restore and maintain this type of wildlife if we are permitted to do so. Most important of all, I think, is the effect of introducing the habit of mental extrapolation into all courses just as rapidly as the teachers can be imbued with it: the student is likely to associate future wildlife problems with other problems of the future. He will then be better equipped to meet them when the future arrives.

GEOGRAPHY OF THE UNITED STATES FLAXSEED INDUSTRY

GEORGE F. DEASY
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The flax plant (*Linum usitatissimum*) supplies two valuable products, fiber and seed. Generally, however, distinct varieties are grown for each purpose. The short, coarse fiber yielded by the many-stemmed seed varieties is unsuited for spinning, while the seed yields of the tall, single-stemmed fiber varieties are low. Except for a small quantity of fiber-flax grown in the Willamette Valley of Oregon, all the flax produced in this country is of the seed type.

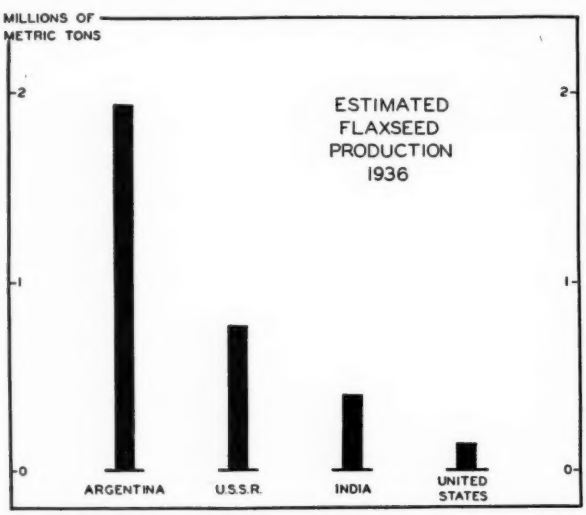

Fig. 1. The relative world significance of the United States in flaxseed production is apparent from this graph. Source: International Institute of Agriculture, 1939.

Linseed oil is the world's outstanding drying-oil. No other paint oil begins to equal it in importance, altho tung oil is a significant competitor and several others of superior drying are rapidly rising in importance. The United States ranks fourth among the world producers of flaxseed. However, its output is far exceeded by that of the Argentine, Russia, and India (Fig. 1).

GEOGRAPHIC FACTORS IN THE DEVELOPMENT OF THE UNITED STATES FLAXSEED INDUSTRY

Linseed oil was the earliest vegetable-oil of any significance in the United States. Fiber-flax was one of the first crops planted by colonists on arrival from Europe. During the Colonial Period almost every farmer had his patch of fiber-flax. While such flax was seldom grown primarily for its seed, nevertheless the seed not needed for planting was crushed for oil. The commercial linseed oil

industry began in the United States about 1805 and was the earliest vegetable-oil industry of the country. The early rise of this industry, in contrast to the delayed development of other domestic vegetable-oil industries, can largely be attributed to the fact that the former is an inedible[1] and drying oil and is used primarily in paints, and as such it was non-competitive with the firmly established, non-drying, edible animal fats and oils.

Until almost the middle of last century, linseed oil remained the sole vegetable-oil of any significance produced and consumed in this country. The subsequent rise of the cottonseed oil industry, and the very recent development of the soybean industry, have enabled these two domestic oils to eclipse linseed oil, but seed-flax still remains the only drying-oil raw material to be produced in this country in large quantities.

The center of flaxseed production in America continually shifted for many decades before 1900, and even today flax production is in a mild state of flux. Flax has been, until recent years, a pioneer crop in American agriculture. During colonial times the major center of production was along the Atlantic Coast. By 1850, Ohio and Kentucky were the leading flaxseed producing states. During the following half-century the center shifted progressively thru Indiana, Illinois, Iowa, and Minnesota, and by 1900 North Dakota was the leading state in this respect. This shift toward the middle Northwest was due in part to the injurious effects of flax wilt as it followed the flax plant into the newly opened lands (once flax wilt is introduced it may remain in the soil for an indefinite period); in part it was caused by the inability of flax to compete effectively with the weeds that were introduced into the virgin land (flax seedlings do not grow as rapidly or as tall as wheat or oats and the mature plants do not shade the ground as completely, so consequently flax is less able to compete successfully with weeds growing on the land at the same time); in part this shift was motivated by the larger yields obtainable on the fertile new soils (flax is a comparatively shallow-rooted crop that tends to quickly exhaust the fertility of the surface layer of continuously used soil); and in part it was the natural gravitation of the flax crop toward an area with climatic conditions most suitable for seed production.

During recent decades flax production has become stabilized

[1] Small quantities of cold-pressed linseed oil are being consumed as food in parts of Russia and India.

primarily in certain of the North Central States, and the flax industry has become a phase of permanent agriculture rather than of the migratory type. This new stability has been due partly to the absence of new and fertile virgin lands to attract the flax-grower with their large yields, partly to the recent development of flax varieties that are immune to wilt and can be grown in rotation on a given plot of land for years at a time (these varieties are used almost exclusively in the United States today), partly to the perfection of new farming techniques whereby weeds can be somewhat more effectively controlled and flax given a better chance to survive, and partly to the fact that flax has at last apparently reached the region with optimum climatic conditions for seed production insofar as such an optimum exists in this country.

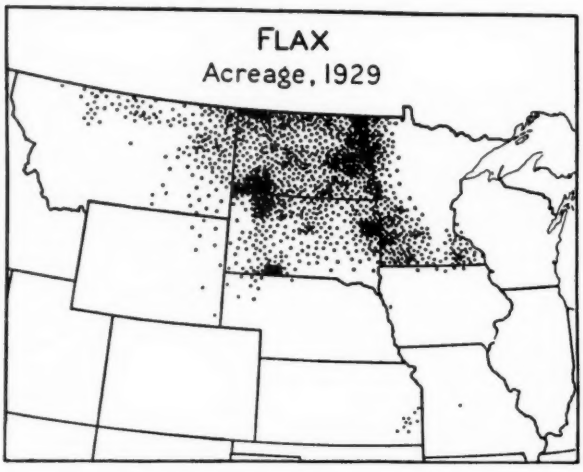

Fig. 2. The distribution of flax acreage has changed somewhat since 1929, but the general position of the flaxseed producing area remains about the same. Minor producing centers of the West and Southwest are not shown. Source: United States Department of Agriculture.

LOCATION FACTORS IN THE PRESENT FLAXSEED INDUSTRY

The present major flax-producing region of the United States is situated in the Spring Wheat Belt states of western Minnesota, the Dakotas, and Eastern Montana (Fig. 2). This region produces approximately eighty-five per cent of all the flaxseed grown in the country (Fig. 3).

The boundaries of this "Flax-Belt" are primarily climatic. The western boundary is set by deficient rainfall. Altho the seed-flax plant requires relatively little moisture to mature, it will not thrive in the almost arid western parts of the Great Plains, nor in regions farther west. Hence, the western boundary diagonally bisects Montana from northwest to southeast.[2] The eastern boundary, on the

[2] Small quantities of flaxseed are produced even in the westernmost parts of the Montana plains, however.

other hand, is determined by too much moisture. An annual rainfall of over thirty inches (given the temperature conditions that exist in the flax-producing region) subjects the flax grower to the risk of excessive plant losses thru moisture-bred diseases such as rust. Heavy rainfall also favors the growth of weeds, one of flax's most serious enemies, and makes harvesting, curing, and threshing more difficult. The optimum rainfall seems to be between twenty-five and thirty inches a year.

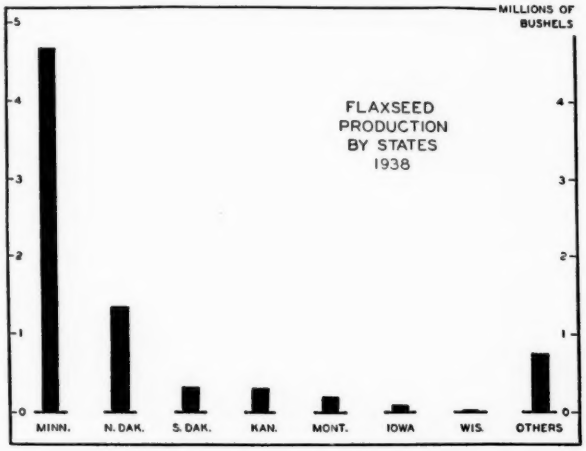

Fig. 3. Production figures for this graph include a small quantity saved for seed. Over one-half of the total production of flaxseed in the United States comes from Minnesota. Source: United States Department of Agriculture.

The southern boundary of the "Flax-Belt" is set by temperature conditions. Flax is primarily a cool climate crop. The high summer temperatures of the central and southern Great Plains and Prairies are not favorable to thrifty plants and losses due to heat-induced causes sometimes are great. The flax that is grown in Kansas is generally sown early so as to avoid the high temperatures of mid-summer, but such plantings must encounter the danger of late frosts. The northern boundary of flax production in the United States is the international boundary. However, seed-flax is grown northward in the contiguous Canadian area, as far as the length of growing-season permits (flax generally requires from ninety to one hundred and ten days between seeding and ripening).

Other minor centers of flaxseed production in the United States are the Willamette Valley-Puget Sound Trough region of Oregon and Washington, the San Joaquin and Imperial Valleys of California, and certain restricted areas in Arizona, southern Texas, and Idaho. In the Southwestern States flax is both irrigated and grown as a winter rather than a summer crop (as in India and much of Argentina). Production is increasing rather rapidly in some of these disjunct areas.

DISTRIBUTION OF FLAXSEED MILLING CENTERS

Flaxseed crushing mills have a somewhat different type of location than those processing most other domestically produced oil seeds. Unlike the latter, flax mills are not all located primarily with reference to the flaxseed producing areas of this country. Instead, many of them are found in port cities (Fig. 4). Such coastal locations are particularly advantageous in view of the fact that from one-fourth to

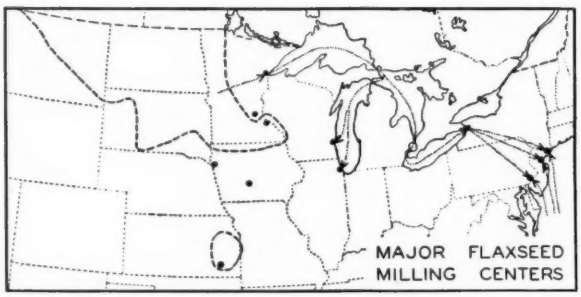

Fig. 4. Each dot represents a major flaxseed milling center, consisting of one or more mills. They do not represent individual mills. Three major milling centers, located at Los Angeles, San Francisco, and Portland, Oregon, are not shown. The dash lines encircle areas of major flaxseed production. The dotted lines show movement of domestic and foreign linseed to port milling centers. Source: United States Department of Agriculture.

TABLE ONE

United States Production and Net Imports of Flaxseed, 1921-1939

Year	*Domestic Production** (bushels)	*Net Imports*** (bushels)
1921	8,107,000	22,608,000
1922	10,520,000	27,910,000
1923	16,563,000	20,400,000
1924	31,220,000	14,565,000
1925	22,334,000	20,133,000
1926	18,531,000	24,148,000
1927	25,174,000	18,011,000
1928	19,118,000	23,746,000
1929	15,924,000	19,830,000
1930	21,673,000	7,757,000
1931	11,755,000	13,804,000
1932	11,511,000	6,173,000
1933	6,904,000	18,441,000
1934	5,661,000	15,456,000
1935	14,520,000	15,396,000
1936	5,273,000	26,037,000
1937	7,089,000	17,861,000
1938	8,171,000	18,744,000
1939	17,439,000†	

* Note: Includes small quantity required for seed purposes.
** Note: Includes small quantity of linseed oil in terms of seed.
† Note: Preliminary estimate.

three-fourths of our domestic consumption of linseed oil has been supplied by foreign flaxseed for the last several decades (Table I).

FUTURE OF AMERICAN FLAXSEED INDUSTRY

The future of the United States flaxseed and linseed oil industry is not too promising. Competition from foreign sources, especially Argentina, is great despite the increasingly high tariff walls such imports must hurdle, and since the World War we have been the world's largest importer of flaxseed. Drought, grasshoppers, crickets, and fluctuating yields due to other causes set back domestic production from time to time (flax stays green longer and is harvested later than wheat and consequently suffers heavily during years when grasshoppers or crickets are numerous). The exacting requirements of flax cultivation and harvesting tend to deter expansion in acreage of the crop except at the incentive of large returns. Furthermore, the importance of linseed oil in the paint and varnish industry has been steadily declining as it is being replaced by superior or cheaper drying-oils such as tung, soybean, perilla, and oiticica. The flaxseed industry of this country, therefore, does not seem destined to experience any marked permanent expansion in the predictable future.

VISITING A GEOGRAPHY CLASS IN PRAHA

M. MELVINA SVEC
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Schools built during the twenty year existence of the Czechoslovak Republic were both modern and modernistic (Fig. 1). The buildings were numerous and large for the new order brought compulsory education to all language groups within the country's boundaries. In the rural village, the town, and the city, these rectangular grey stone and concrete buildings stood out in striking

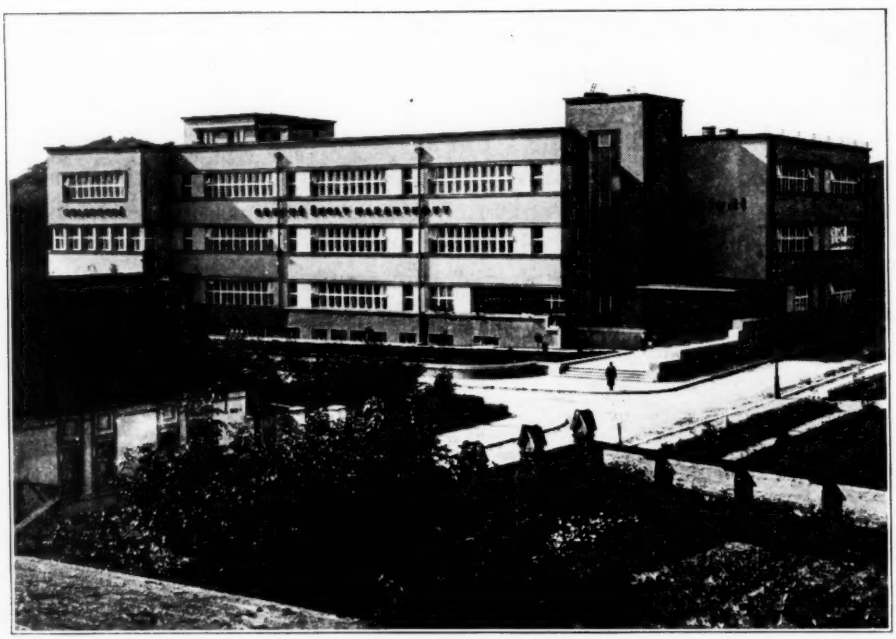

Fig. 1. Elementary school in the industrial town of 10,000 population, Strakonice, Southern Bohemia

contrast to the confused but picturesque architecture of the old castles, churches, and town hall nearby.

The school day started at eight o'clock with dismissal at one o'clock. Some afternoon classes were held on certain days of the week for such elective subjects as: English, Home Economics, and Industrial Arts. The school week numbered six days with only a Sunday holiday. All assignments were prepared at home for no provision was made for study periods during the school hours. The

periods were fifty minutes in length with a brief ten minute interval between classes. During this recess, the children strolled about the corridors, eating a sandwich or cake or piece of fruit, and visiting quietly with their classmates.

The materials and equipment of an average classroom were similar to that observed in Fig. 2. Large colored pictures, moveable

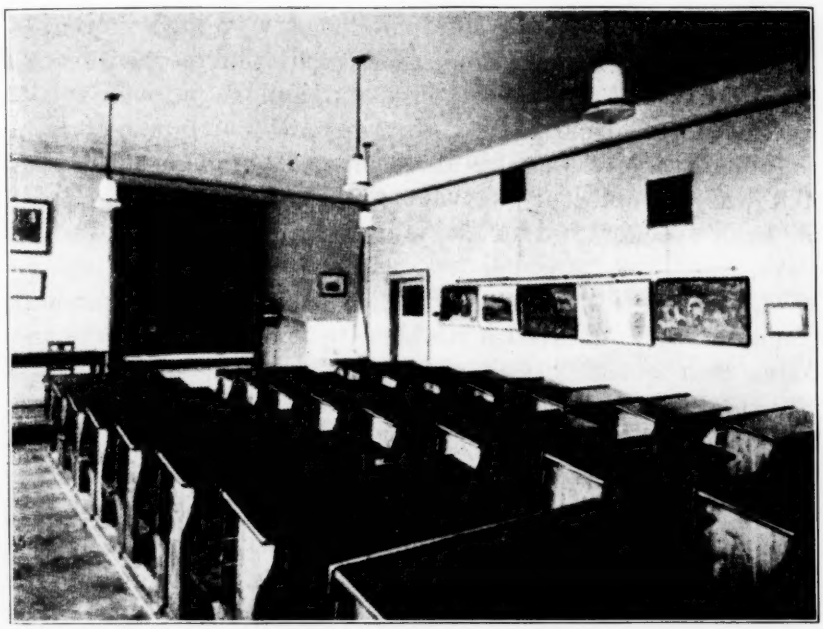

Fig. 2. Typical Classroom

wall maps, and globes were found in the geography room. Each pupil had a detailed Atlas because the textbook was not much larger than a small booklet. A wealth of information was gathered by the children from the interpretation of maps, pictures, and tables of statistics.

The Principal had obligingly arranged a program of visitation and here was the geography class that the visitor might observe. The sober faces and bright eyes of fifty-four boys, twelve year olds, looked intently at the visitor from "Amerika." They had just finished telling the visitor some bits of information about America that were of special interest and significance to them, such as: facts about the Cotton Belt and the Corn Belt; the marvels of California, the natural wonders of Yellowstone Park, and the great distances involved in a country of such vast proportions.

The teacher consulted briefly with the visitor, then turned to the class and suggested, "Here, boys, is your opportunity to ask our visitor for such first-hand information about America that remains unanswered after our recent study of that great country." The boys needed no prompting. Hands waved eagerly.

"Please, Lady Professor," asked one of the boys, "how much is a liter of benzine (gasoline) in your country?"

"And how much does an automobile cost?" added another.

Needless to say it took some rapid calculation on the part of the Lady Professor to translate cents and gallons into crowns and liters, and as the time passed, to translate feet into meters, and miles into kilometers. In rapid succession came the questions, faster than it was possible for the visitor to summon command of her feeble Čech* vocabulary for she had been in the country less than ten days.

"Do you tunnel thru the Cordilleras the way we tunnel thru our mountains?" ventured a towhead near the front of the room.

After that question was answered, a serious faced boy had the floor and he asked, "How long are your trains? We understand that they are both large and long."

Soon the boys learned that the midget sized "iron-horse" and "wagons" of the European railroads were but "ponies" and "carts" in comparison to the rolling stock with which Americans were familiar. Freight cars were found to be five and six meters in length (15 to 18 feet) in contrast to the American lengths of 38 to 45 feet. Recent replacements in Russia and Germany would be more comparable to standard equipment in United States.

More hands were now raised. There were questions about oil drilling and then one boy inquired rather dubiously, "Are the oil wells in California *really* out in the ocean?"

Two questions of real geographic import impressed the visitor. One was, "Tell us about your straight street patterns. How did they happen to be that way?" The second questions was, "What is the biggest difference between the rural landscape of our country and your country?"

After the visitor told the class about the buildings, gardens, and equipment on the individual and isolated farmsteads in contrast to the rural village groups in their country, of the barbed wire fencing in contrast to their open fields, and of the machinery

* Usually spelled "Czech" in America.

in contrast to their hand labor, the boys agreed that a ride along a rural highway in New York State or in Iowa would present a very different picture than that to which they were accustomed. In Bohemia, the rural villages were a mere collection of small homes and stables, and the larger rural towns were usually industrialized, boasting of a mill or factory or even a variety of factories. Such villages with a population of a few thousand to several thousand inhabitants would be strung along a valley and visible from most any slight knoll in the vicinity.

A great source of mystery to these boys was the fact that the Lady Professor was able to carry on a conversation of a sort with them in their own language. They had supposed that English was the language spoken in the United States, but here was a native of that very country speaking in their own tongue! It was most confusing. The visitor explained that the language in the United States was English tho it had as many variations from England's English as their Čech had from Slovak.

"Well, then, if you Americans speak English, how are you able to speak Čech?" insisted the boys who had raised the original question. This brought forth laughter and smiles of approval.

"Some of our citizens," exclaimed the visitor, "were of Čech and Continental ancestry. Tho the families had lived in America many years, the native tongue and to a degree the culture brought over by the earlier immigrants were retained within the family circle for as many as three and four generations."

To this explanation, the class nodded in approval. The question hour continued.

"How many meters tall is the tallest cloud-grabber or cloud-poker in New York City?" another boy was prompted to inquire.

The Lady Professor looked bewildered and was at a complete loss to understand that question. What might this "cloud-grabber" be? With considerable explanation and enthusiasm on the part of the class, it eventually occurred to the visitor that the boys were talking about "sky-scrapers." The height was given as more than 300 meters. Promptly a pupil ventured to make a comparison with the Eifel Tower. To this, the others agreed.

Among the other questions asked, were the following: "How does it feel to be in a street in which buildings tower so high into the air?"

"How noisy is traffic in New York City?"

"Tell us about the Metro (subway), the trams, and elevated."

"How tall is the Statue of Liberty?"

"What sports do the children enjoy?" Upon hearing that many of the games and sports were the same as they too enjoy, the boys expressed satisfaction at this common interest and seemed to feel a sort of camaraderie with the American boy.

The final question which concerned that unique American industry, the movies, was, "Are your movies like ours? How much do they cost?" This proved a most interesting topic to the visitor as well.

First of all, movies, in Praha were called "Bio," a shortened form of the word "biograph." Movies were considered a rather recently developed type of entertainment. The average movie house in Praha boasted of no structure comparable to the American movie palace. With land values high and with space at a premium, the movie house was usually located underground. The entrance would be from an arcade or corridor. The ticket was purchased at a booth on the ground floor at prices ranging from four to fifteen crowns (15¢ to 83¢), depending how far down the steps or how high in the balcony the seat was located. The farther down into the sub-floor and the nearer to the screen, the cheaper the ticket.

The show started in mid-afternoon with four or five complete programs presented between the opening and closing hours. The continuous show such as would be expected here in America did not exist. Therefore, if a person chanced to arrive ten or fifteen minutes late for the particular performance for which the ticket had been puchased, he would never see the beginning of that reel unless he chose to pay the fee again and attend the next performance. At the half-way point, there would be a general intermission during which candies and ice cream were sold.

The most popular and talked about films prior to September 1938 came from the United States and the Soviet. Other films were Čech, English, Italian, and German. The sources of film entertainment since last March have been supervised by Berlin.

And so the geography class period came to a close. It had indeed been a revelation to observe the eagerness and freedom with which the group participated in the conversation. Underneath the serious and earnest attention they gave to their work, one detected the lively healthy active boys typical of their age.

THE STRUGGLE FOR NATURAL RESOURCES AS A CAUSE OF THE EUROPEAN WAR*

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One of the pertinent questions before the world today is that pertaining to the cause or causes of the European War. An amazed world is asking why. Two decades ago our country placed 4,000,000 men under arms and transported 2,000,000 of them across to Europe to fight a war to end war. Today, when the eldest sons of the veterans of that war are barely of military age, we find Europe again engaged in a similar struggle. It is only by attempting to understand the causes of such recurring wars that we are able to act intelligently toward the present situation.

While there is no single cause for the present European War, this discussion deals only with the struggle of the nations to secure natural resources. Other factors causing the war can not be ignored, but space does not permit their consideration here. The evils of the Versailles Treaty as the cause of the present situation can not be neglected. Differences in race, language, and religion, the conflicts of differing economic and social orders, and contrasting political systems must always enter into any evaluation. Bungled diplomacy, the personal ambition of rulers and dictators, and perhaps others may be important or contributory causes of the present European War. Some of these are contingent upon and have developed out of the struggle for natural resources.

Natural resources are given by nature. They are permanent in location and can not be changed. Moreover, they are basic in the development of nations, and no nation and no people can make great progress without possession of or access to the world's resources upon which life and progress are dependent.

The natural resources of the world may be divided into five large groups. The most important of these is land, especially soil. In the present world, minerals are almost co-equal with soil in importance as a basis of modern civilization. The third resource is that of water, both inland and oceanic waters. Of less relative importance are forests and wild life. Since these last two have not

* This paper was written in April, 1940. Subsequent events have changed the line-up of several nations, but the struggle to control these essential minerals continues. A good question for your class is: How vigorous a war can Italy wage without opening the Mediterranean to the oceans? Editor.

been important causes of wars in the past, since they do not enter actively into the present situation, and are not likely to be pertinent causes of wars in the future, they may be dismissed from further consideration in a topic dealing with the competition for natural resources as a cause of the present European War.

MINERALS

Our modern power and mechanical civilization is built upon minerals. They are especially important as a cause of controversies and wars between peoples and nations because they are very much concentrated. A small area of land, because it contains minerals, may be vastly more important than a much larger area of non-mineral lands. One area of Europe about the size of New Hampshire contains 60 per cent of the good coal of Europe and in normal times produces 60 per cent of the iron and steel of that continent. C. K. Leith is authority for the statement that the United States and the British Commonwealth of Nations control three-fourths of the world's mineral production and reserves.[1] Great responsibility rests upon these nations or upon any nation that assumes control of such a large percentage of a basic resource.

COAL

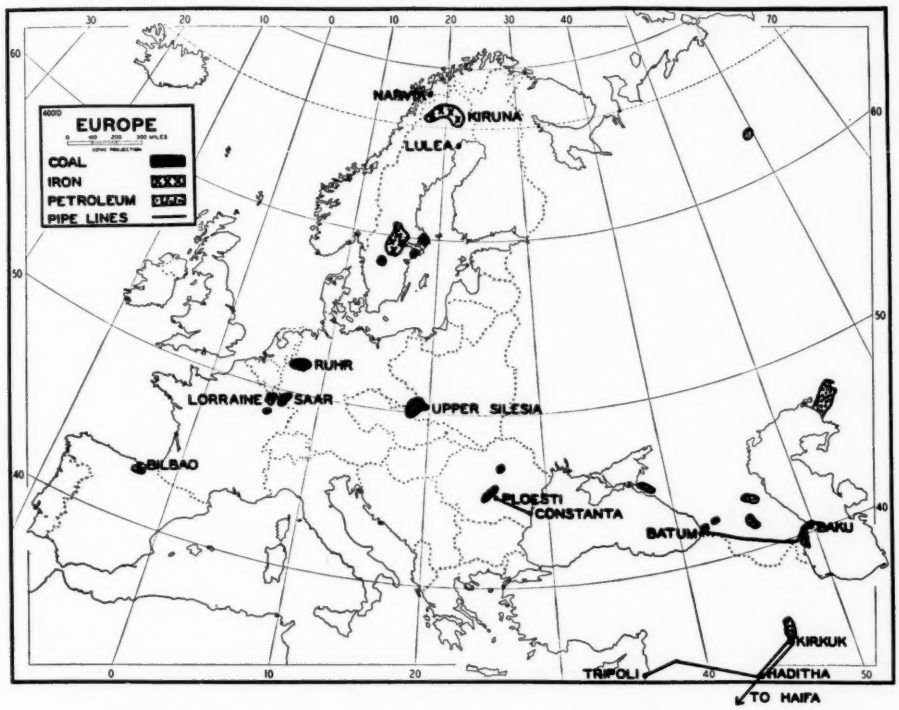
Coal and iron are the industrial twins of modern economic life. The Germans are responsible for the statement that "Iron is war gold." As an illustration of the struggle for minerals let us turn to the Upper Silesian coal field located at the junction of Germany, Poland, and Czechoslovakia.[2] Prior to the World War this highly mineralized region was controlled entirely by Germany. The district contains not only rich coal of the coking variety, but also important deposits of iron, lead, and zinc. At the close of the World War, following a plebiscite, this Basin was divided, Germany getting less than half of the minerals, and Poland getting a somewhat larger share, with a small slice going to Czechoslovakia. Following the invasion of Czechoslovakia and Poland by Germany this entire mineralized district is again under German control. It was one of the things that Hitler wanted when his armies overran Czechoslovakia and invaded Poland. When this war ends the Upper Silesian

[1] *World Minerals and World Politics*, p. 15. Whittlesey House, McGraw Hill, 1931.

[2] The discussion here assumes the old boundaries because no others are yet accepted by the world.

Basin will again be a bone of contention, especially if Poland and Czechoslovakia are reconstituted.

Diagonally across Germany in the northwest portion of the country lies Europe's richest coal field. The Ruhr Coal Field contains 60 per cent of the good coal of Europe. It lies just east of the Rhine and a short distance from the French and Belgian boundaries. The greatest industrial region of Germany has developed upon it. In this 2,000 to 3,000 square miles are concentrated many



Sketch map of Europe showing location of certain mineral deposits

of the large industrial cities of Germany, manufacturing iron and steel, cotton, woolens, chemicals, munitions, and a multitude of other commodities.

IRON

After Germany secured the Lorraine iron fields about 75 to 100 miles to the southwest of the Ruhr at the close of the Franco-Prussian War, it supplied most of the iron for the blast furnaces of the Ruhr from these fields. During much of the time prior to 1914 it

produced over 90 per cent of its needs for iron largely from this source. After 1871 it became one of the avowed intentions of France to recapture the Lorraine iron fields which had been lost to Germany. That was one of the major objectives of France in the World War of 1914-1918. When France emerged a victor in that struggle, it demanded and received German Lorraine with its iron ore. These deposits, together with those in the French portion of Lorraine, make up not only the greatest iron ore deposit in Europe but one of the very large reserves of the world. The iron ores are hematite running about 33 per cent metallic iron. They are also high in sulphur and phosphorus which makes them difficult to smelt. However, Germany had invented ways of smelting the ores and was using them for most of its iron ore supply. We now have the unusual situation of Europe's richest coal field just east of the French-German boundary and the richest iron ore deposit just west of the same boundary. The successful utilization of these two great resources is mutually interdependent the one upon the other, but they are separated by a political boundary line between two hostile nations which prevents their free interchange. Since 1918 Germany and France have made various agreements concerning the exchange of these minerals; but neither nation has any desire to become dependent upon the other, because war might interfere with the flow of such essential commodities.

Consequently, Germany has turned to other sources of iron ore. It supported the Franco party in Spain, and following the close of that conflict imported the Basque ores from northern Spain, which prior to that time had supplied about 26 per cent of the British needs. Britain, shut off from the Spanish ores, turned to the high grade ores of Sweden where Germany was already taking eight to nine million tons. Much of the rich Swedish magnetite ores carrying as high as 60 per cent metallic iron are located at Kiruna and Gellivari beyond the Arctic Circle. Sweden had placed a limit of 10.5 million tons upon its export of ore from these fields. With the demands made by Germany plus the new demands made by Britain, Sweden was unable to supply both countries. It had three alternatives. Supply Germany and refuse Britain and thereby lose a good neighbor. Supply Britain's demand and cut down Germany's quota and thereby secure the enmity of Germany. It accepted the third alternative, which was to raise its export quota to 12.7 million tons and supply the demands of both nations.

Sweden is thus in a peculiar situation. It has the richest resources of high grade ore in Europe, but does not have coal to smelt it. It, therefore, naturally moves to the nations with coal, particularly Germany and Britain. These nations insist upon their demands being met and Sweden is afraid to displease either. Someone has compared Sweden's position to that of a rich man counting his treasure while a gang of desperadoes look on. Poor Sweden is never certain when some desperado may try to take its treasure.

The April invasion of Norway by Germany is an attempt to guarantee the flow of the Swedish ore to Germany. The landing of troops at Narvik had a two-fold objective: first, to place the German army in striking distance of the iron mines located about 100 miles inland and connected by rail with Narvik and, secondly, to cut off the flow of the Swedish iron ore from Britain. Narvik is the winter route by which the iron ore reaches markets when the Baltic is frozen. That Sweden can maintain its neutrality in the face of the demands of its two powerful neighbors seems doubtful. With the coming of spring the summer route to Germany via Lulea and the Baltic will be available to that country. This fact may lessen the pressure upon Sweden until winter again closes this route.

PETROLEUM

A third mineral which has been the source of much competition in Europe as well as the other parts of the world is petroleum. No nation of Western Europe has large supplies of petroleum. There are two large reserves of petroleum in Europe. One is the Rumanian field along the east and north flanks of the Carpathian Mountains, and the other is the Russian supply on the western side of the Caspian Sea and on the north and south sides of the Caucasus Mountains. It is upon these two sources that both Germany and Russia must depend for their supply of petroleum during war time.

South from the Caspian Sea running thru Iran and Iraq to the head of the Persian Gulf are large reserves of petroleum. Several concessions have been secured, numerous explorations have been made, and some production has resulted. Pipe lines from Kirkuk along the upper Tigris have been built with termini at Haifi and Tripoli. There are two possibilities of war in these areas to secure control of these supplies, and thus handicap competing nations. It is rumored that France and Britain may break with Russia and, in joint action with Turkey, attack Russia in the Black Sea Region,

capture the oil port of Batum, and drive north and occupy the oil fields of the Caucasus. Such a seizure would be serious to both Germany and Russia. The other possibility is that a combined German and Russian army might drive southeast toward the Persian Gulf and capture the Kirkuk and Iranian oil fields and thus handicap Britain and France in their supply of petroleum for ships in the Mediterranean Sea and the Indian Ocean. Either one of these contingencies would be serious if successful.

The most recent attempt to control petroleum supplies is now aimed at Rumania. It appears that Germany is disappointed in the amount of petroleum supplied from Russia. Apparently Russia's transportation system is inadequate to move surplus petroleum stocks from the Caucasus to Germany. Hence Germany is making a drive to secure the oil of the nearer Rumanian fields. It says these are essential to its existence. Much of the petroleum of Rumania is produced with French and British capital and by companies from these countries. These companies and Britain and France oppose the forced sale of Rumanian oil to Germany, and the allied governments threaten armed intervention if Rumania forces the sale of this oil to Germany.

From these few illustrations it is evident that one of the chief causes of competition among the nations of Europe is for control of these basic minerals. Space does not permit a consideration of various other minerals, for which keen competition prevails. These include, copper, tin, bauxite, vanadium, tungsten, chromium, and others. Never before in the history of the world has there been such a searching-out for essential mineral reserves. The World War of 1914-1918 made evident the tremendous advantages of a nation controlling mineral supplies.

Economic self-sufficiency of mineral supplies is impossible for any nation in the present-day world. Such an attainment would be unfortunate if possible, because a nation thus endowed might become a menace to the rest of the world. There are enough minerals in the world for all nations to have all they need. Freedom of international trade will assure an adequate supply for all.

As a cause of past wars, an important factor in the present war, minerals continue to be possible causes of future wars. Only by some arrangement guaranteeing to all nations a necessary share either by possession or by trade can hope of peace be assured.

PRIMARY GEOGRAPHY*

THOMAS F. BARTON
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Primary Geography, a much neglected and undeveloped phase of geography, offers unusual opportunities and vast potentialities which should be utilized. The writer believes that geography can contribute scientific description and at least partial explanation of its physical elements to primary pupils in an understandable language. More complete interpretations and detailed descriptions of the physical elements can be added as the pupil matures.

PRIMARY SCIENCE

For seventy years naturalists and educators have worked to place science in the elementary school curriculum, embracing all grades from kindergarten to the eighth. In many schools today, primary science is a reality.

Few geographers have cooperated with this science movement. Furthermore, the establishment of this subject has not even stirred many geographers to take advantage of the opportunities offered them by contributing content, materials, and methods from the field of physical geography. Consequently, elementary science is often dominated by biologists who apparently saw and grasped the dangling opportunities. It is not surprising to find this field often "top-heavy" with biological subject matter and to discover only a meager amount of physical geography and this, often poorly done. Geographers are chiefly to blame for these existing conditions.

POSSIBLE CONTRIBUTION OF PHYSICAL GEOGRAPHY

Now that primary science has become a reality, what phases of physical geography might be included in this subject? In order to answer this question, one must first ascertain its content. Stated briefly, primary science should be the study of the physical environment in which the child lives. Geography at an early date was a study of the physical environment and its relationship to man.

The writer believes that all the elements of geography treated in physical geography texts, namely weather and climate, landforms, water bodies, soil, rocks and minerals, native plant life,

* Abstract of a paper presented at the Chicago meeting of National Council of Geography Teachers, December 28, 1939.

native animal life and location should be included in primary science. Other topics which should be taught and which are found in many geography books are the universe, directions, distance and space and the physical phases of conservation.

Upon examining magazines for primary level, one will discover that persons writing for these magazines are interested in the physical elements just mentioned. Some of these writers, unfortunately, lack the academic knowledge necessary to make these stories and exercises scientifically correct.

In some colleges and universities, science departments admit that physical geography should occupy a larger portion of the primary science content. In the summer of 1938, the science departments of the Southern Illinois Normal University were called upon to prepare a course of study outline for the Natural Science Area of the Illinois Rural Curriculum Guide. The committee appointed to select and outline the units to be considered in the Natural Science Area consisted of one representative from each of the various science departments, namely, agriculture, botany, chemistry, geography and geology, health education, physics, and zoology. The committee agreed upon the following units for the primary level:

Animals (Ecological phase)
Plants (Ecological phase)
Human Body
Uses of the Body
Weather
Restoration and Conservation of Natural Resources
Minerals and Metals
Soil
Geographic land forms (including treatment of sedimentary rocks)
Geographic water bodies
The Universe
Direction, Distance, and Weight
Mechanics
Heat, Light and Sound
Electricity and Magnetism

You will notice that only three of the fifteen headings do not come under physical geography. Six of the units belong definitely to the field of physical geography and geographic instruction gives information about six others.

With this fact in mind, why shouldn't geographers cooperate more with the leaders in the elementary science movement? Geographers certainly are better prepared to contribute physical phases of geography to elementary science than any other group of scientists.

REASONS WHY GEOGRAPHERS SHOULD RECOGNIZE PRIMARY SCIENCE

Some reasons why geographers should recognize primary science are: 1) experiments prove that primary pupils are interested in the physical elements of geography; 2) teachers will find in present courses of physical geography opportunities to acquaint themselves with more phases of the physical environment suitable for primary level than in most courses of the same length in other science fields; 3) physical elements of geography are often poorly taught in the primary level; and 4) geography teaching thruout the educational system would be benefitted by this change.

PRIMARY GEOGRAPHY AT THE SOUTHERN ILLINOIS NORMAL UNIVERSITY[1]

During the summer term for the last three years, the Geography and Geology Department at this school has offered Kindergarten-Primary Geography as a senior college subject. The subject is recommended in the following courses: Primary Elementary Four-Year Course, Rural Elementary Four-Year Course and Elementary Teachers and Supervisors Four-Year Course. Because of insistent demand, enrollment in the class is limited to thirty students. Thanks to an increase in the geography staff this course can now be offered during the regular school year. The Director of Cadet Teaching and the Head of the Placement Bureau has asked that two classes in Kindergarten-Primary Geography be offered during the summer term and at least one during the regular school year.

As prerequisites to Kindergarten-Primary Geography, two geography term courses covering the elements of physical geography are required. For these preparatory courses Finch and Trewartha's book is used as a text. It is supplemented with material covering more in detail units on the universe, directions and distance, and some phases of conservation.

The course is similar to a seminar. Each student prepares a unit on some phase of primary physical geography which she plans to use in her teaching. Part of these units are presented before the class and criticized. Articles from magazines for the primary level are also criticized as to content and technique. In the same manner, primary science readers and textbooks are critically studied. Arrangements have now been made so that students may present some

[1] This course was made possible thru the cooperation and encouragement of President Roscoe Pulliam, Professor Bruce Merwin, Director of Training Schools, Mr. W. G. Cisne, Superintendent of Elementary Schools, and Mr. Troy Stearnes, Superintendent of Rural Training Schools.

of the units they have prepared before the kindergarten and primary classes. If the plan materializes, the college class will be able to discuss units both before and after they have been taught. Thus the course will combine seminar and laboratory teaching methods.

Suggested Teaching Methods

Six methods in which primary geography may be presented to the child are: stories;[2] short explanations; experiments; recording observations; construction; and field trips.

Conclusion

Primary geography is a challenge to primary teachers and to geography departments. Primary teachers will follow practical suggestions and leadership. Will geography departments meet the challenge?

FIELD ACTIVITIES IN THE MIDDLE GRADES*

Adelaide Blouch
Lakewood, Ohio

In Lakewood, we have had some interesting experiences and faced numerous problems while developing a program of field activities for the middle grades of our school system. Our program is still growing, and we feel that the results amply repay our efforts.

Lakewood experiences show that if a field trip is well conducted, not only does the class benefit during the time actually consumed by the excursion, but increased motivation secures better classroom work. Our trips have definite purposes growing out of the school work, such as finding answers to these questions: "How is land used in the vicinity of our school?"; "From what places do our winter fruits and vegetables come?"; "How does our city get its water supply?"; "How are the materials used in our mills shipped into the city?"; "What land forms may be seen in our vicinity?"

The successful outcome of a field trip, as any other educational

[2] Barton, Thomas F., "The Penguin and the Ostrich," Journal of Geography, Vol. 38; pp. 188-191, 1939.

* Abstract of a paper presented at the Chicago meeting of the National Council of Geography Teachers, December 28, 1939.

experience, depends on careful planning and organization. The teacher goes over the ground thoroly so that she may know what it is she wishes the class to learn from the experience. A guide sheet is prepared for use of the class on the trip. This is in the form of an open outline with questions to be answered and observations to be checked. These guide sheets are not to be considered tests.

It is difficult to fit a field trip, in which one teacher and class are involved, into a departmentalized school program. Under our present program it is possible for a teacher to take her class away from the building for two hours, or in some cases a half day without greatly inconveniencing other classes. When necessary, administrators and teachers have cooperated in making program adjustments.

We feel that it is desirable to secure an attitude of friendly interest in our schools on the part of the public. The interest of parents in these trips is evidenced by their comments to teachers and by reports of the children about trips taken with parents. We are experimenting with scales to measure these outside interests. If it is thought necessary to visit private concerns, every effort is made to conduct the trip in a way which will give the management of the company satisfaction and promote a friendly attitude toward this type of activity. The children understand that it is a privilege and that they can show their appreciation by keeping with the group and giving courteous attention to the guide. In a discussion period, preceding a trip, the boys and girls discuss problems of safety on the streets and in cars, and courtesy to guides and others with whom we come in contact.

Transportation is a serious problem, and several solutions have been attempted. Because of the risk to be assumed, we have given up the use of private automobiles. If the destination can be reached by street car, this method of transportation is used, largely because of the low cost. It is difficult for a teacher because it requires close supervision on the car as well as on the streets. The ideal method of transportation, from many standpoints, is the bus. Instructions may be given and observations more readily made on the route. Time is also saved. In Lakewood, a local bus company is willing to take classes on trips for a very reasonable charge. The possibility of our school board making an appropriation to meet part of this cost has been discussed. If this can be done, one of our most important problems will be solved.

A great variety of learning activities are carried on when preparing for the trip, during the excursion, and as an outgrowth of it. Many of these are related to reading and language.

Early in the first semester of the fifth grade, a neighborhood trip is made to study uses of land in the vicinity. On a simple map of the area, the children jot down their observations. Afterward a large map is made representing the various types of land uses by different colors of paper or crayola. Snapshots are pasted in place and street names are printed on the map.

During the study of the region of the Great Lakes in the second semester of the fifth grade, it seems most opportune to go on an excursion thru the Cuyahoga River Valley, or, the Cleveland "Flats" as it is called. We follow an established itinerary. A map accompanies the pupil's guide sheet. Here, in Cleveland's inner harbor are seen blast furnaces and steel mills, storage piles of raw materials, freight boats, oil refineries, and other industries. During last autumn there was much activity in the mills and consequently in the shipping. Before our trip, we read items from the shipping news in the daily papers. Slides and mounted pictures were studied both before and after the trip. This trip is the high point of our fifth grade geography study.

During the study of the growing of winter fruits and vegetables in fifth grade, a trip to the Northern Ohio Food Terminal is arranged. Other trips by fifth grade classes have been made to Swift and Company, greenhouses, and to the Weather Bureau at the Airport.

Among the excursions taken by our sixth grade boys and girls have been trips to a filtration plant which supplies Lakewood with water, to Rocky River Valley to study rock formations, and to the Cleveland Museum of Natural History.

Aside from factual information received and skills developed as a result of these trips, classes have given evidence of broader interests. They return to their textbooks, reference materials, and maps with an aroused curiosity. After a field trip they see geography as something which really concerns them and the textbook as a means of interpreting the world about them. If it leads, as we hope, to out-of-school interests, it will be a valuable means of enriching their lives. Therefore we feel that this type of activity is desirable, possible, and worthwhile.

NEXT ANNUAL MEETING OF THE NATIONAL COUNCIL OF GEOGRAPHY TEACHERS

The annual meeting of the National Council of Geography Teachers will be held, December 27 to 31, at Louisiana State University, University, Louisiana. The University has graciously extended the Council the use of its class rooms, auditoriums, dining rooms, and dormitories, which are extensive enough to provide at the same time for the meetings of the Association of American Geographers. A nominal flat rate will probably be charged for lodging and meals in the dormitories. Make your reservations for rooms and meals not later than Dec. 2, with Dr. Richard J. Russell, Louisiana State University, *University,* Louisiana. Similarly, all mail must be sent to *University,* Louisiana. If mail is sent to Baton Rouge, its delivery will be delayed beyond your stay at University.

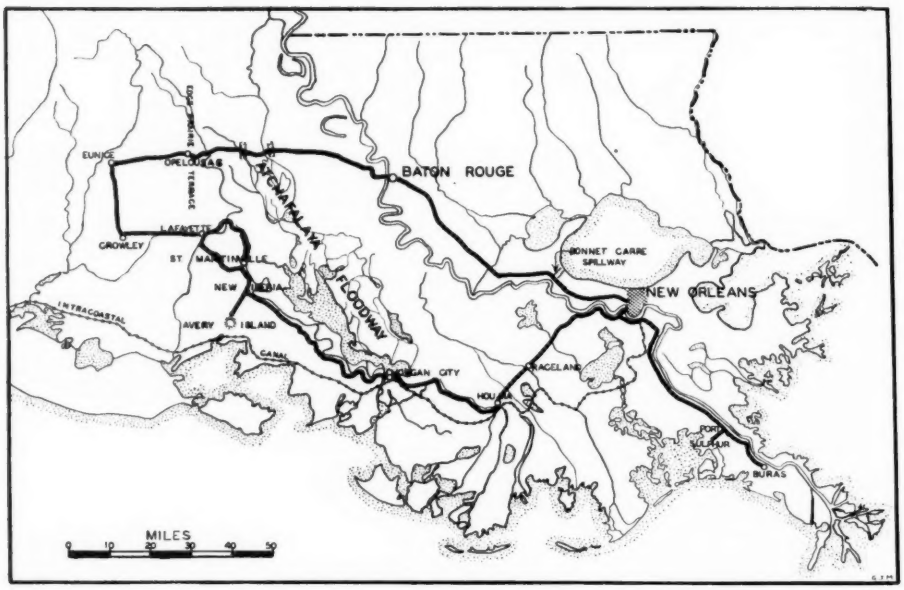
Since both the Association of American Geographers and the National Council thought it advisable to have one half day devoted to a symposium on Louisiana, it was deemed advisable to have this symposium presented at a joint session of the Association and the National Council. The programs of the other sessions of each organization will parallel each other.

The field excursions of each organization, two somewhat similar, will be conducted separately. That of the National Council will be conducted by Professor Chatterton of Southwestern Louisiana Institute. Professor Chatterton has for years lived in this region and has made intensive study of its development. He knows this area and its people as few know it. Features to be observed on the tour are great bridges over the rivers and bayous, natural levees, protective levees, spillways, and spillway levees; cotton, cane and rice farms; cotton gins, rice mills and sugar houses; homes of plantation owners and tenants; Evangeline Country; oil refinery, oil fields, salt mine, sulphur mine; tub-tropical vegetation, including live-oaks and Spanish Moss, orange groves, palm trees, camphor trees, and numerous other varieties; sea food industries, including the shrimp fleet, shrimp and oyster canneries, crab fishing; coastal marsh lands; New Orleans, old French section and modern New Orleans.

The itinerary proposed by Professor Chatterton follows this announcement, along with a sketch map of the route.

As this is the season of heavy tourist travel to this region, the Council is very grateful to the President and Dean of Women of

Southwestern Louisiana Institute for opening the dormitories of the Institute to Council members for the night of Dec. 29. At the present writing, the place of lodgings at New Orleans on Dec. 30, has not been secured. It must be remembered that the excursion ends on Dec. 31, at which time members must be prepared to secure their own lodgings. Members cannot return that night to Louisiana



Sketch map of proposed tour, December 29, 30, 31, 1940

State University as the American Mathematical Society and affiliates meet there at that time.

Reservations for the three day excursion, Dec. 29, 30, and 31, must be made not later than Dec. 2, with Professor H. J. Chatterton, Southwestern Institute, Lafayette, Louisiana. The cost of bus transportation, two nights' lodgings and meals will probably not exceed $20.00. It is almost unbelievable that so much can be seen for so little money. Begin now to make plans to attend the meetings at University, Dec. 27 and 28, and to join the excursion for seeing the Delta County of Louisiana, Dec. 29, 30, and 31.

Itinerary for Proposed Journey for Members of National Council, December 29, 30, 31

FIRST DAY OF TOUR, DECEMBER 29

Beginning in Baton Rouge and ending in New Orleans.

Leave University by bus at 7:00 A.M. and see the following high lights between University and Lafayette

Standard Oil Refinery
Cross $9,000,000 bridge spanning Mississippi River
Protective levees, natural levees along river
Sugar cane fields, sugar houses in the distance
Atchafalaya Basin, spillway levees
Protective levees adjacent to river and $1,000,000 bridge
Prairie Terrace, Western rim of Mississippi flood plain
Terrace built during Peorian interglacial interval
Opelousas
Cotton region
Bare cotton fields, farm and tenant homes
Cotton gins
Eunice—Crowley
Rice fields, rice levees, rice mills in Crowley
Rice experiment station in Crowley
Breaux Bridge—Saint Martinville
Pass thru Lafayette and short stop at oil field. Drilling rigs, producing wells, gas flares
Broad natural levee along Bayou Teche from Breaux Bridge to Saint Martinville
Evangeline Oak—Grave in Saint Martinville
Old French homes along the Bayou
New Iberia
Dinner
Pepper industry, canning plants
Pretty homes, moss draped trees and sub-tropical vegetation in lawns
Avery Island
Pass sea marsh lands on road
Crab fishing in Canal
Salt mine, shaft sunk into salt dome
Jungle Gardens, greatest variety of sub-tropical vegetation perhaps in south
Bird sanctuary
Tabasco pepper factory

Night—Return to Lafayette, spend night in dormitories of Southwestern Louisiana University

SECOND DAY OF TOUR, DECEMBER 30

Leave Lafayette 7:00 A.M.
Fafayette to Morgan City
Journey thru sugar cane country, passing sugar cane plantations, tenant homes, sugar houses, great variety of varied vegetation
Shrimp fleet and shrimp canneries in Morgan City
Morgan City to Houma
Bayou area, much low marshland, live-oaks
Spanish Moss
Oyster canning plants in Houma
Raceland
Great sugar house and refinery
Raceland to Port Sulphur, south of New Orleans
Pass thru industrial area south of New Orleans along banks of Mississippi River

Dinner—Port Sulphur

Ten mile boat trip (fast) to Sulphur Mine, mining of sulphur

Buras

Leave Port Sulphur and travel along lower Mississippi River to citrus fruit area where perhaps 1,000,000 bushels of citrus fruit are produced: oranges, grape fruit, mandarins, kumquats, etc.

New Orleans

Return from Buras and spend night in New Orleans

THIRD DAY OF TOUR, DECEMBER 31

Old New Orleans: Vieux Carre

Royal Street Antique Shops

Cabildo, state museum

Old Saint Louis Cathedral

Old French homes and other places of interest

New Orleans: modern portions

Canal Street

Middle American Museum at Tulane University

Journey ends in New Orleans

BAGGAGE WILL BE TRANSFERRED TO NEW ORLEANS BY LOUISIANA UNIVERSITY

CORA P. SLETTEN, *President*

EDITORIAL NOTES AND NEWS

The April Bulletin of the Nebraska Council of Geography Teachers features the program of their annual meeting, May 9-11, at Chadron, Nebraska. A field trip from Lincoln is included thru the Sandhills, over the High Plains and Pine Ridge of Chadron, and thence to the Black Hills and Bad Lands of South Dakota. The Bulletin also has a number of tests and a scheme for dramatizing world wind belts, by Carrie Hansen, Hastings, Nebraska.

DR. H. T. STRAW, Department of Geography and Geology, Western State Teachers College, Kalamazoo, has been awarded a grant-in-aid by the Social Science Research Council of New York City. The grant will enable him to complete his study of the land utilization and population problems of the Eastern and Western Highland Rim Plateaus of Tennessee.

An appeal for publications comes from the Teachers College of National Sun Yat-Sen University, Chengkiang, Yunnan, China. The college, struggling to maintain itself following the disruption caused by the Japanese War, will be grateful for any materials you may be able to send it.

The New England Geographical Conference held its seventeenth annual meeting at Clark University, April 26-27, with more than two hundred in attendance. A separate session was devoted to each of these topics: The European conflict, the teaching of geography, and New England. Dr. Leonard O. Packard presided.

According to the latest bulletin of Lambda chapter of Gamma Theta Upsilon, Southern Illinois Normal University has established a weather observation station in co-operation with the Aerological Division of the United States Department of Agriculture. Dr. Thomas Barton, head of the geography department, will supervise the observations which will be taken four times daily, and which will be sent in code to Chicago. The chapter reports that new geography courses are being established in several high schools in southern Illinois, taught by persons trained in this field of specialization. Included among the courses are political geography and conservation.

According to a recent release from the United States Bureau of Mines, an extensive variety of new minerals has been discovered in northern Sweden, near the gold mining center of Boliden. Rare rubidium and caesium, as well as pitchblende, are included.

The annual meeting of the New York State Geographical Association will be held at the University of Rochester, October 12. There will be papers, reports, a field trip under the leadership of the Monroe County Planning Board, and a dinner. The program, planned for teachers of Geography, Social Studies, and Science, will be available after September 25, from the chairman, Robert Simpson, Department of Geology, University of Rochester.

DR. DAVID J. SWARTZ is to give a course in Methods and Content in Geography, this fall, at the Staten Island Teachers Association.

DR. WALLACE W. ATWOOD, President of Clark University and founder of the University's School of Geography, was especially honored in the May, 1940, issue of the

Monadnock, bulletin of the Clark University Geographical Society. Clark alumni were the contributors to the publication which marked President Atwood's twentieth year at Clark.

A textile from soybeans is one of the achievements research chemists of the Ford Motor Company announced in 1939.

The Ohio Council of Geography Teachers held its annual meeting, May 4, at Oberlin College. The Council's membership exceeds 200. The guest speaker at the dinner was Dr. Paul B. Sears of Oberlin College, who talked on Conservation Problems Facing the Geography Teachers. The president-elect is Walter Crewson, Massillon, Ohio; the treasurer, Evelyn G. Weston, Cuyahoga Falls, Ohio.

According to various reports, Saudi Arabia flashed into world news last year as a producer of about four million barrels of petroleum. An American company has a number of producing wells in the Dammam field, with a forty-odd mile pipeline to Ras Tanura, Persian Gulf port. The oil company's lease is for sixty years, and extends over an area of more than 200,000 square miles. Ibn Saud, the ruler of Saudi Arabia, some years ago captured the Hejaz and thus added the Red Sea Kingdom with the holy cities of Mecca and Medina to his original conquest of Nejd, the hot dry interior of Saudi Arabia. The Dammam field is just north of the producing oil field on Bahrein Island in the Persian Gulf. Just south of Bahrein Island lies a potential field on Qatar Peninsula. At the northwest end of the Persian Gulf is another potential world field in the Kingdom of Kuwait which adjoins Saudi Arabia. All of these Persian Gulf fields add to the political tension centered in the nearby Near East fields of Iran and Iraq, one of the world's most important oil reserves.

MISS HARRIET CARTER, retired instructor from the Frick Training School of the Pittsburgh Public School System, was honored last May at a testimonial dinner given by the Geography Club of Western Pennsylvania. Miss Carter was one of the founders of the Club, served as its president for three years, and also served as president of the State Council of Pennsylvania. Miss Carter is also an active member of the National Council and has been a frequent contributor to the JOURNAL OF GEOGRAPHY.

GEOGRAPHICAL PUBLICATIONS

Harold Hull McCarty. **The Geographic Basis of American Economic Life.** 702 pp, 92 photographs and illustrations. Harper and Brothers, N.Y., 1939.

This book, which treats of the industries, economic institutions and geography of the United States on a broad regional basis, opens with two introductory chapters: "Geography and Economics," and "The Geographic Environment." In the first, the United States is viewed as "a land of territorial specialization in which people, in order to make the most of their resources, have devoted their economic lives to the production of specialized types of goods." Attention is here given to the "economic process," to national income, consumption, production and welfare. At the conclusion of Chapter I, it is stated that "the purpose of this volume is to present a simplified analysis of the geographical distribution of economic life in the United States." Two other purposes, which do not seem to be altogether reconcilable, are elsewhere stated: "to explain the manner in which man utilizes the various elements of the geographic environment," and "to provide a simplified working model of the economic system of the United States." Chapter 2 is, indeed, a simplified treatment of the "geographic environment." The following twenty-seven chapters are devoted to discussions of ten areas, termed "economic regions," into which the country is divided. The limits given the western regions (exclusive of the Great Plains) are identifiable as the standard physiographic divisions of Fenneman; the six eastern areas are the Gulf-Atlantic, Appalachian-Ozark, Northern Lake and Forest, Cotton Belt, Corn Belt and Manufacturing Belt. The regional outline thus offers many departures from tradition and, in this reviewer's opinion, frequently violates reality without apparently offering compensating rewards in the direction of simplicity of presentation. The author breaks with tradition also in progressing, in his discussion, from western to eastern regions, a procedure offering many advantages. He points out that the bolder relationships between natural environment and economic development in the Pacific Coast region make for easier comprehension than the older and culturally more complex eastern regions. "In succeeding regions," he observes, "the importance of physical limitations is lessened and greater emphasis is laid on cultural factors." The author's style is consistently interesting, occasionally dramatic. Several of the regional chapters compare favorably with other textbook treatments of the same areas or topics and should provide supplementary readings suitable for college classes in North American geography and in general economic geography.

RALPH H. BROWN

University of Minnesota

Derwent Whittlesey. **The Earth and the State—A Study of Political Geography.** 618 pages, 85 maps, index. Henry Holt and Company, New York, 1939.

For students of political geography and those giving, or planning to give, courses in this field, the most important publication of many years is this volume in which Professor Whittlesey presents the product of some twenty years of study. Those who wish to use it as a text can be confident that it provides the material for a course of high value; many portions should be included as assignments in any course in political geography, and the entire book is required reading for all teachers of that field.

The major portion of the book examines regionally the political areas of the world that are organized under European systems of government; the geopolitical (politico-geographic) pattern is interpreted in terms of the historic development in the particular natural setting. Major attention is given to the nations of Europe, excluding

the Soviet Union, and the Americas, and—much more fully than is common—to the colonial areas of Africa.

In contrast with Bowman's *New World,* focussed on present problems with relatively little explanation of the development of the present states, this work is primarily directed toward an understanding of the intricate combination of historical and geographic facts that produced the present geopolitical structure of the world and underlie the present processes of change. The student who has mastered both may well feel competent to teach political geography. If any find it slow or difficult to follow the author's rich use of the combination of the written word with the details on his maps, they can only conclude that political geography requires a mastery of geographic technique.

RICHARD HARTSHORNE

University of Minnesota

Geography-English Relationship

One of the difficult lessons for many children to learn is, that a skill learned in one class is carried to other classes and into life. Too often students in English, for example, think that a noun is something to use in English class and forgotten as soon as they are outside.

In order to integrate several school subjects in a manner that would show the interdependence of subject upon subject as well as emphasize cultural-natural relationships, I assigned the following exercise.

The students were told to look up all nouns on pp. 213-216 in J. Russell Smith's *Other World Neighbors.* At the same time they grouped them in two columns. The heading of one was worded human, and the other natural. This accomplished they were told to draw straight lines, connecting the related words in each of the columns.

When the written work was completed, one student would give a human item and call upon another to answer by giving some natural cause. If the answer was considered correct, the one answering gave a human factor and so the circle continued. If the answer was not correct another question was asked.

This integration exercise had the following advantages:

1. It drilled 7A students about nouns at a time when they were studying this part of speech.
2. It showed pupils that there are geographical human and natural nouns as well as English common and proper nouns and these were classified at the same time.
3. It taught the students to express relationships by the use of single words.
4. The integrating idea was even carried over into class discussion when student questions and answers were tied to a proper use of nouns which at the same time were word relationships.

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